

## I CLAIM:

## 1. A rheometer comprising:

a bearing block having a continuous wall section, without bore-holes, made from an air-permeable material, said continuous wall section defining a recess;  
a rotor having a shaft, said shaft disposed with play in said recess of said bearing block; and  
means for applying pressurized bearing air to a side of said wall section facing away from said shaft, wherein said bearing air penetrates through said wall to form an external air cushion within said recess for supporting said shaft in a contact free, radial and/or axial direction.

2. The rheometer of claim 1, wherein said recess has a through-bore in which said shaft is supported in a radial direction by a radially outer air cushion.
3. The rheometer of claim 1, wherein said rotor comprises a disk seated on said shaft, said disk extending in a substantially perpendicular direction relative to an axial extension of said shaft, said recess having a cylindrical chamber in which said disk is disposed with play and in which said disk and said shaft are supported in an axial direction by an axial air cushion.
4. The rheometer of claim 1, wherein said bearing block has several air channels formed therein, to guide said bearing air to a side of said wall of said recess facing away from said shaft.

5. The rheometer of claim 3, wherein said bearing block has several air channels formed therein to guide said bearing air to a side of said wall of said recess facing away from said disk.
6. The rheometer of claim 1, wherein several axially spaced annular channels are formed on a side of said wall of said recess facing away from said shaft.
7. The rheometer of claim 3, wherein several axially spaced annular channels are formed on a side of said wall of said recess facing away from said disk.
8. The rheometer of claim 6, wherein said annular channels are connected via several axial channels, separated in a peripheral direction.
9. The rheometer of claim 7, wherein said annular channels are connected via several axial channels, separated in a peripheral direction.
10. The rheometer of claim 4, wherein said air channels are connected to a common air supply.
11. The rheometer of claim 1, wherein said air-permeable material is one of sintered carbon, artificial graphite and ceramic.